

6.25 OPERATIONAL MONITORING OF TR-LIMITER DEGRADATION BASED ON CLOSE RANGE GROUND CLUTTER

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TR limiters are widely employed as receiver protection equipment in operational weather radars. Typically the lifespan of a weather radar exceeds that of such limiters, resulting in a need to replace them. When replaced on a corrective basis, the radar downtime can occur at inconvenient moments during severe weather. Also the radioactive substances often present in these limiters poses strict regulation and administration of these components, which can be a nuisance during unscheduled repair. Moreover, TR limiter failure is usually preceded by degradation, which can affect data from an extended time before the failure. Preventive replacement is undesired, due to the very large variation in lifespan these components. Ideally, a warning message is generating specifying that component degradation has commenced.

TR limiters typically show an increased recovery time before failing, which can be exploited to monitor component degradation. Large recovery times will show up in produced data by reduced ground clutter at close range to the radar site. Monitoring the close-range ground clutter could give an indication of the state of the limiter.

This study presents preliminary results to which extent monitoring of ground clutter can be used to identify TR limiter degradation and prediction of failure.